

CLAIMS

1. A lithium ion secondary battery, comprising:

a positive electrode comprising a positive electrode core material including a positive electrode current collecting portion and a material mixture carrying portion, and a positive electrode material mixture layer carried on said material mixture carrying portion;

a negative electrode comprising a negative electrode core material including a negative electrode current collecting portion and a material mixture carrying portion, and a negative electrode material mixture layer carried on said material mixture carrying portion;

a separator interposed between said positive electrode and said negative electrode;

a porous electron-insulating layer interposed between said positive electrode and said negative electrode, and

a non-aqueous electrolyte;

wherein said positive electrode material mixture layer includes a lithium-containing composite oxide;

said negative electrode material mixture layer includes a material capable of absorbing and desorbing lithium;

said porous electron-insulating layer includes an inorganic oxide filler and a binder;

said porous electron-insulating layer is carried on an

region including a surface of said positive electrode current collecting portion and a surface of said positive electrode material mixture layer, and/or carried on a region including a surface of said negative electrode current collecting portion and a surface of said negative electrode material mixture layer; and

said positive electrode and said negative electrode are wound with said separator and said porous electron-insulating layer interposed therebetween.

2. The lithium ion secondary battery in accordance with claim 1, wherein a portion of a strip positive electrode lead and a portion of a strip negative electrode lead are welded to said positive electrode current collecting portion and said negative electrode current collecting portion, respectively.

3. The lithium ion secondary battery in accordance with claim 2, wherein said positive electrode current collecting portion and/or said negative electrode current collecting portion has an exposed region not carrying said porous electron-insulating layer, and said portion of lead is welded to said exposed region.

4. The lithium ion secondary battery in accordance with claim 1, wherein said porous electron-insulating layer is carried on at least a portion of said positive electrode lead and/or said negative electrode lead, said portion of lead being disposed on said current collecting portion.

5. The lithium ion secondary battery in accordance with claim 1, wherein said binder included in said porous electron-insulating layer comprises a resin material which does not have a crystalline melting point, or has a crystalline melting point of 250°C or more.